

Voltage Sensor



Product Features

- Measures DC voltages from -30 to +30 Volts.
- The sensor is not Ratiometric

Designed to be used with:

- 1018 - PhidgetInterfaceKit 8/8/8
- 1019 - PhidgetInterfaceKit 8/8/8 w/ 6 Port Hub
- 1202/1203 PhidgetTextLCD with InterfaceKit 8/8/8

Getting Started

Installing the Hardware

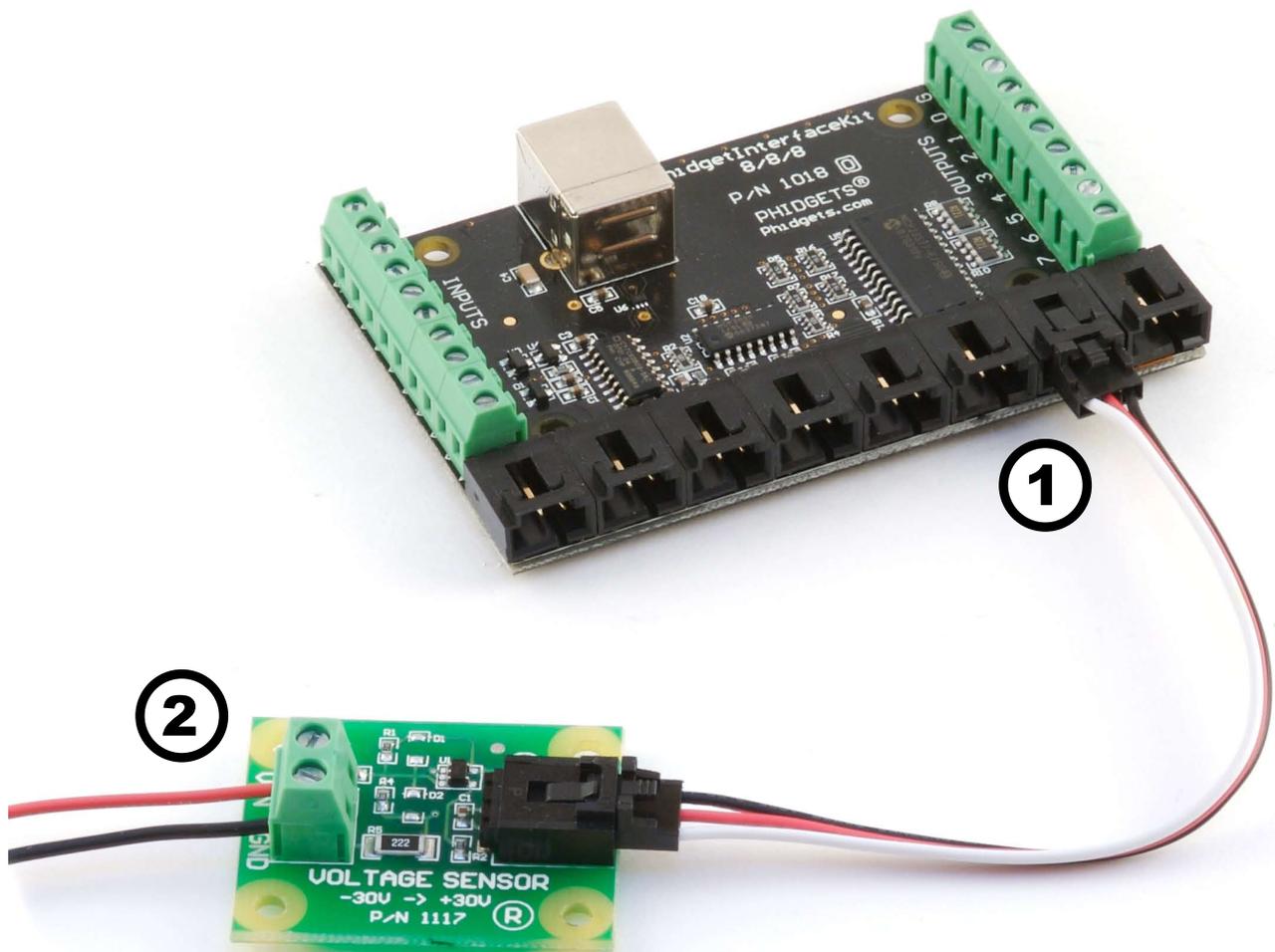
The Kit contains:

- A Voltage Sensor
- A Sensor Cable

You will also need:

- A PhidgetInterfaceKit 8/8/8 or a PhidgetTextLCD
- A USB Cable

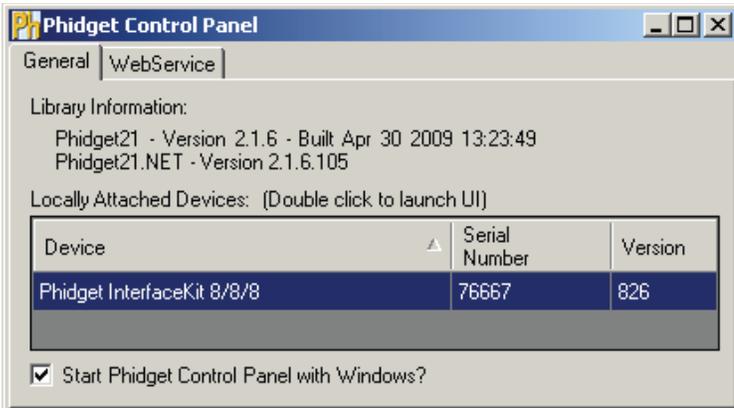
Connecting all the pieces



Connect the Voltage Sensor to an Analog Input on the PhidgetInterfaceKit 8/8/8 board using the sensor cable.

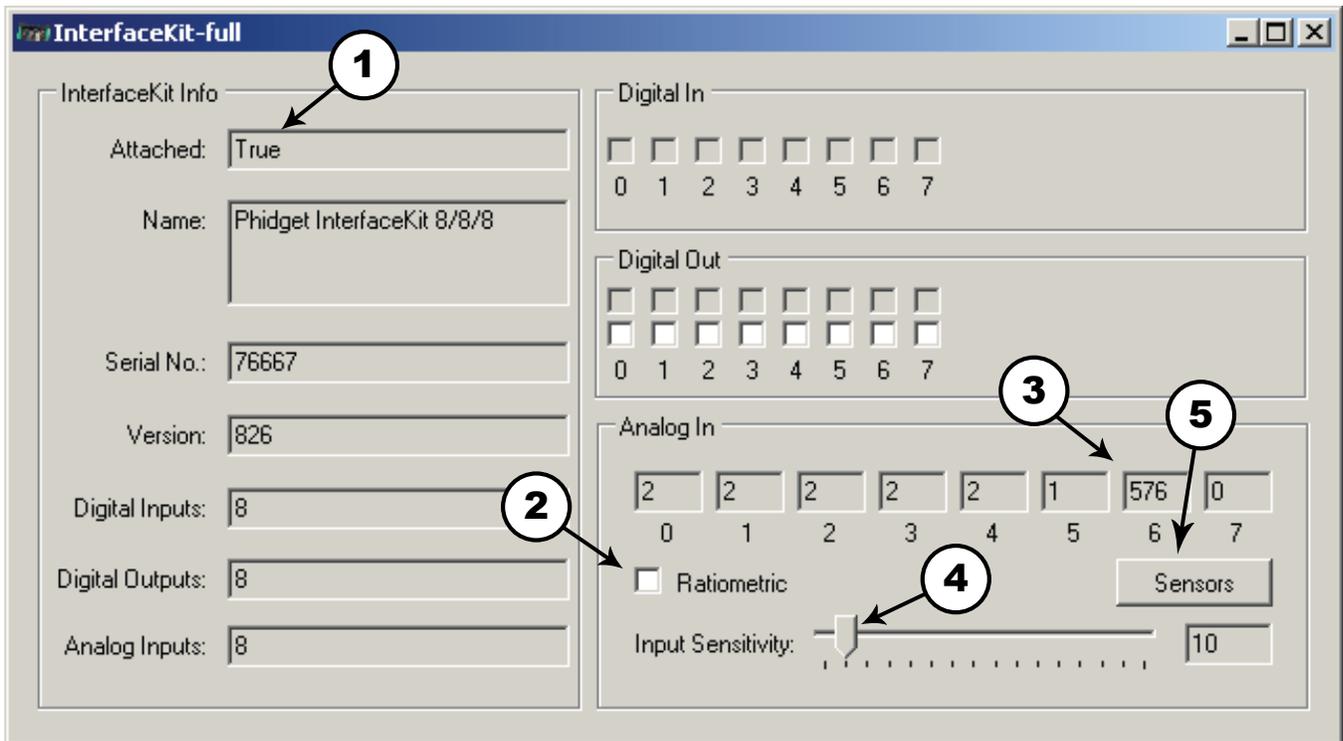
Testing the Voltage Sensor connected to an InterfaceKit 8/8/8

Using Windows 2000/XP/Vista

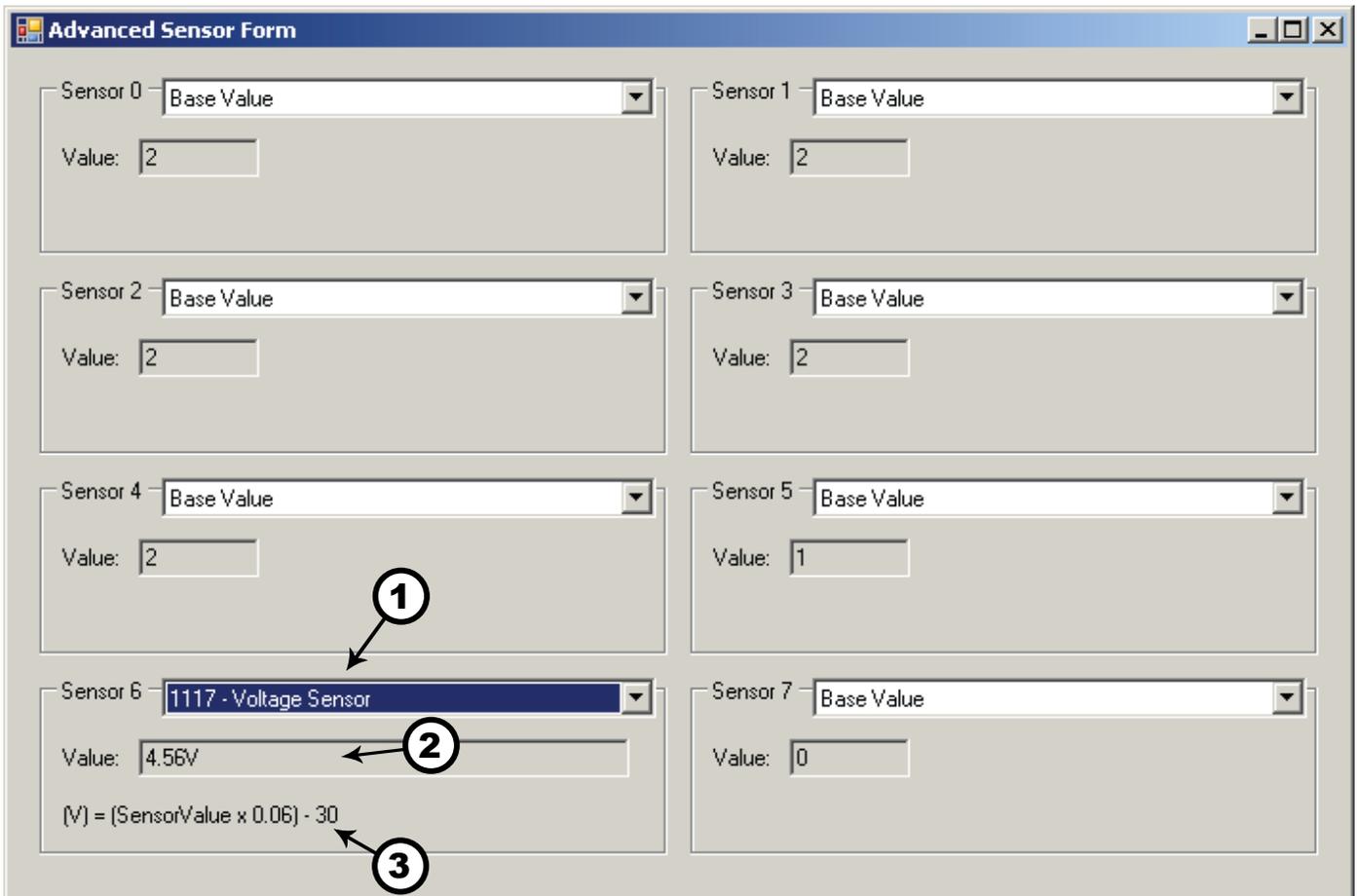


Double Click on the **Ph** icon to activate the Phidget Control Panel and make sure that the **Phidget InterfaceKit 8/8/8** is properly attached to your PC.

1. Double Click on **Phidget InterfaceKit 8/8/8** in the Phidget Control Panel to bring up InterfaceKit-full and check that the box labelled Attached contains the word True.



2. Make sure that the Ratiometric box is **not** Ticked.
3. The voltage of your power source is displayed in the Analog In box.
4. You can adjust the input sensitivity by moving the slider pointer.
5. Click on the Sensors button to launch a detailed readout for your analog sensors.



1. In the Advanced Sensor Form, select the 1117 - IR Voltage Sensor from the drop down menu to get a display for your device.
2. The voltage measured across the sensor is shown here.
3. Formula used to convert the analog input SensorValue into voltage.

Using Mac OS X

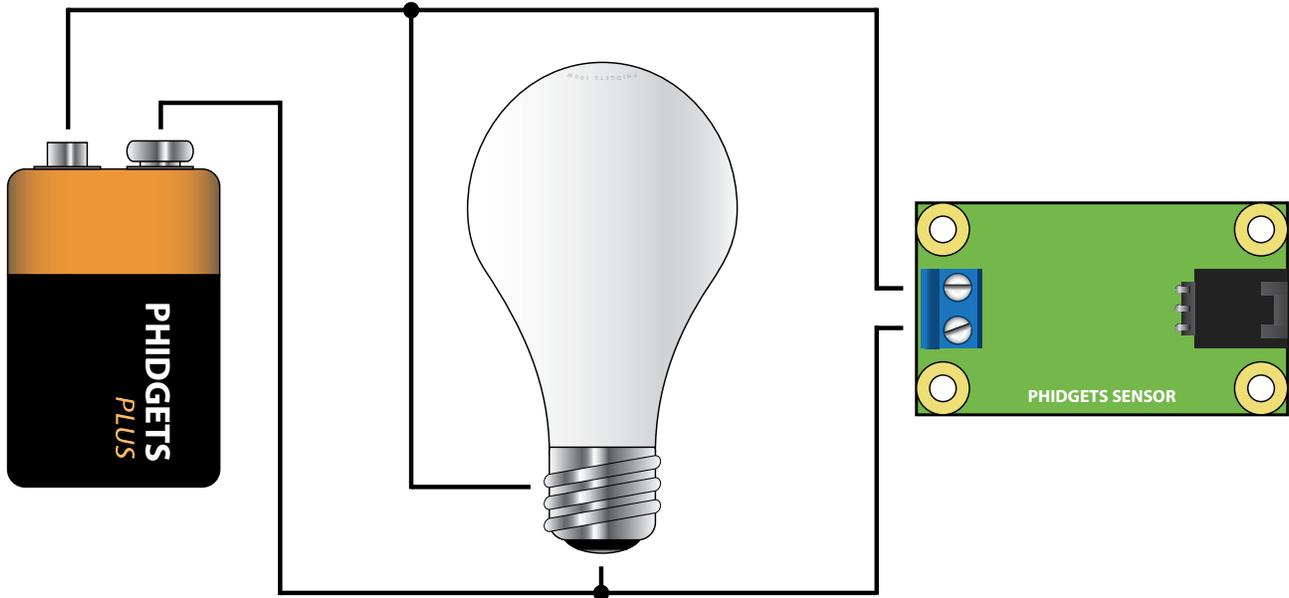
- Click on System Preferences >> Phidgets (under Other) to activate the Preference Pane
- Make sure that the Phidget InterfaceKit 8/8/8 is properly attached.
- Double Click on Phidget InterfaceKit 8/8/8 in the Phidget Preference Pane to bring up the Phidget Interface Kit Example. This example will function in a similar way as the Windows version, but note that it does not include an advanced sensor display.

Technical Information

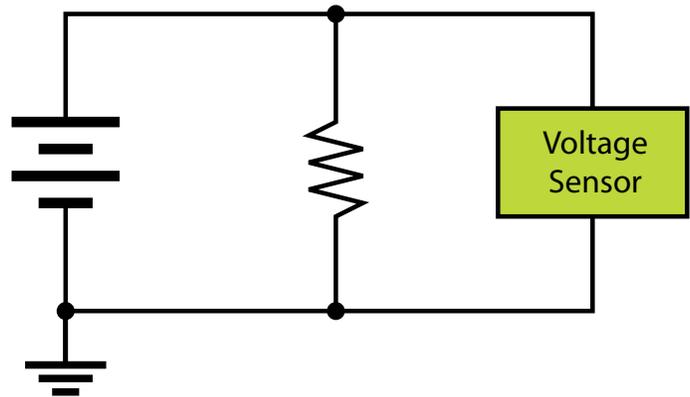
The Phidget Voltage Sensor measures DC voltages between -30 and $+30$ volts.

Measuring Voltage

The Phidgets Voltage Sensor should be wired in parallel to the circuit under test, as shown in the following diagrams.



In the diagrams above and to the left, the voltage source is represented by the battery symbol. The load is represented by a light bulb or schematic resistor symbol. The voltage sensor measures the voltage across the load with respect to ground. When used with an InterfaceKit, ground potential is common between the two devices; therefore this sensor must always measure voltage with respect to ground (sensor is not differential).



Formulas

The Formula to translate SensorValue into Voltage is:

$$\text{Voltage (in volts)} = (\text{SensorValue} \times 0.06) - 30$$

Other Interfacing Alternatives

If you want maximum accuracy, you can use the RawSensorValue property. To modify the formula, substitute (SensorValue) with (RawSensorValue / 4.095)

If the sensor is being interfaced to your own Analog to Digital Converter (not a Phidget device), our formulas can be modified by replacing (SensorValue) with (Vin * 200). It is important to consider the voltage reference and input voltage range of your ADC for full accuracy and range.

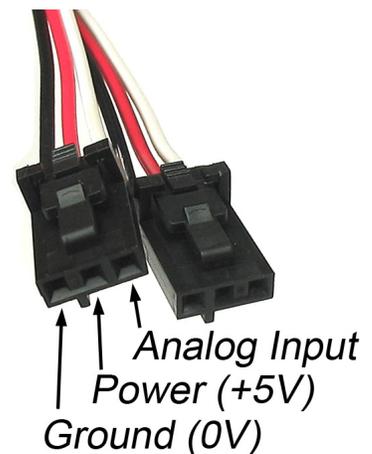
Coding for your Sensor

Phidget analog sensors do not have their own API, but instead their output is a voltage that is typically converted to a digital value and accessed through the SensorValue properties and events on a Phidget InterfaceKit. It is not possible to programmatically identify which sensor is attached to the Analog Input. Your application will need to apply the formula from this manual to the SensorValue to translate it into usable data.

Please see the Phidget InterfaceKit product manual for code samples, an overview of its API, and a description of our architecture.

Analog Input Cable Connectors

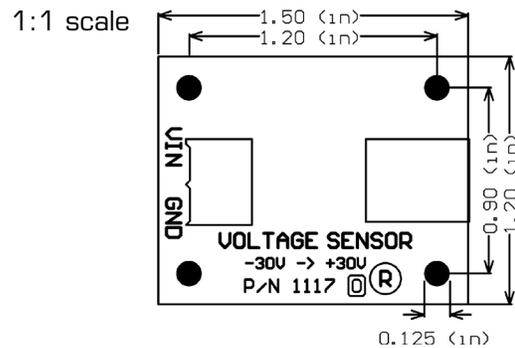
Each Analog Input uses a 3-pin, 0.100 inch pitch locking connector. Pictured here is a plug with the connections labeled. The connectors are commonly available - refer to the Table below for manufacturer part numbers.



Cable Connectors		
Manufacturer	Part Number	Description
Molex	50-57-9403	3 Position Cable Connector
Molex	16-02-0102	Wire Crimp Insert for Cable Connector
Molex	70543-0002	3 Position Vertical PCB Connector
Molex	70553-0002	3 Position Right-Angle PCB Connector (Gold)
Molex	70553-0037	3 Position Right-Angle PCB Connector (Tin)
Molex	15-91-2035	3 Position Right-Angle PCB Connector - Surface Mount

Note: Most of the above components can be bought at www.digikey.com

Mechanical Drawing



Device Specifications

Current Consumption	1mA
Output Impedance	1K ohms
Supply Voltage	4.75VDC to 5.25VDC

Product History

Date	Product Revision	Comment
August 2004	n/a	Product Release